

Important Advances in Clinical Medicine

Epitomes of Progress—Nuclear Medicine

The Scientific Board of the California Medical Association presents the following inventory of items of progress in nuclear medicine. Each item, in the judgment of panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist the busy practitioner, student, research worker or scholar to stay abreast of these items of progress in nuclear medicine which have recently achieved a substantial degree of authoritative acceptance, whether in his own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Nuclear Medicine of the California Medical Association and the summaries were prepared under its direction.

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Gallium Imaging—Is It Useful?

THE USE OF gallium 67 citrate in tumor evaluation and in the detection of occult infection has become an accepted clinical procedure. However, in both uses the efficacy and accuracy of the procedure depends on several factors. Histology, vascularity and anatomic site are of importance in the evaluation of tumors. When used for the detection of infection, the location, amount of leukocyte labeling and leukocyte migration to the inflammatory site influence the degree of uptake.

The malignancies in which gallium 67 citrate has been helpful in staging and in the clinical follow-up of postradiation therapy and chemotherapy include the following: Hodgkin and non-Hodgkin lymphoma, hepatoma, bronchogenic carcinoma, and testicular tumors particularly seminomas. It is of questionable value in most adenocarcinomas including breast, prostate, and gastrointestinal tract tumors. Because of the significant normal gallium 67 concentration within the colon, studies are most accurate when limited to the thorax. When used in a selected patient population, the accuracy of the procedure approaches 90 percent to 95 percent.

In the appropriate clinical situation, gallium 67 is useful in the detection of occult infection and a few nonmalignant lung conditions. Combined bone and gallium imaging is helpful in the initial evaluation of osteomyelitis and in the follow-up of therapeutic results. The bone image will remain positive long after the gallium 67 image has returned to normal since the latter is indicative of acute infection. Abscess detection, particularly in the abdomen, is difficult but if the gallium 67 image is negative it is unlikely that an inflammatory process is present. Renal and perirenal infection can be satisfactorily evaluated by gallium 67 imaging because under normal conditions there should be no gallium 67 concentration in the kidneys after 24 hours. Additional uses of gallium 67 imaging that are now proving to be beneficial include the study of chemotherapy lung toxicity, sarcoidosis and pneumoconiosis.

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REFERENCES

- Freeman LM, Blaufox MD: Gallium citrate (Letters). *Semin Nucl Med* 8:181, 1978
Kumar B, Coleman RE, Alderson PO: Gallium citrate Ga 67 imaging in patients with suspected inflammatory processes. *Arch Surg* 110:1237-1242, Oct 1975